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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,650	03/09/2004	Aki Tomita	16869K-109000US	4199
20350	7590	08/18/2005	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			VO, THANH DUC	
			ART UNIT	PAPER NUMBER
			2189	

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/797,650

Applicant(s)

TOMITA, AKI

Examiner

Thanh D. Vo

Art Unit

2189

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) 4, 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 05/09/2005
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawing is objected to because item 231 of Fig. 2 is misnumbered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claims 4 and 15 are objected to because of the following informalities: the term S-VOL should be RO S-VOL at "...by copying data of an **S-VOL** with the lowest access frequency". Appropriate corrections are required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-3, and 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ofek et al (U.S. 5,889,935)

As to claims 1 and 12, Ofek et al ('935) disclose an I/O system and method comprising:

- a. a plurality of storage devices (see Fig. 1 item 22a-c, and col. 6 lines 20-29).
- b. a controller which controls said storage devices (see Fig. 1 item 16, and col. 6 lines 20-29).
- c. a read/write unit, responsive to the subsequent receipt of a read and write requests (Fig 1. item 30 and 66, and col. 8 lines 4-9).
- d. a logical volume management unit configured to map between logical image of the data storage and actual space (col. 13 lines 25-41).
- e. a volume management unit configured to manage an active primary volume and mirror volumes (Fig 1, and col. 9 lines 25-32).
- f. a restoring unit configured to restore the data between the mirror volumes as an error occurs (col. 23 lines 23-25, and col. 24-26).

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As to claims 2, 3, 13, and 14, Ofek et al ('935) disclose an I/O system and method comprising:

- a. an access management unit configured to set a volume to read-only (col. 23, and col. 24 lines 0-10).
- b. the restoring unit to recover data by copying data of read-only volume to other volume as an error occurs (col. 23 lines 23-35, and col. 24-26).

As to claim 11, Ofek et al ('935) disclose an I/O system comprising:

- a. storage devices are disk drives (Fig. 1 item 20, and Fig. 4 items 223a-d)
- b. a communicating adapter with a data processing system including read and write requests (Fig. 1 items 30 and 66, and col. 8 lines 4-9).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-9, and 15-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al (US 5,889,935) further in view of Kamiyama (US 5,893,139).

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As to claim 4, 5, 15, and 16, Ofek et al ('935) disclose an I/O system and method comprising:

an access management unit configured to set a volume to read-only (col. 23, and col. 24 lines 0-10).

a restoring unit to recover data by copying data of read-only volume to other volume as an error occurs (col. 23 lines 23-35, and col. 24-26).

Ofek et al ('935) failed to teach a monitor unit configured to monitor frequencies of accesses to a read-only volume, and to restore the data of a volume where an error has happened by copying the data of an S-VOL with the lowest access frequency.

Kamiyama ('139) teaches to use an access management section (monitor unit, item 14 Fig. 3) to manage the data access frequency and relocate the storage (col. 4 lines 59-65, col. 14 lines 62-66 – col. 15 lines 0-4).

Ofek et al and Kamiyama are analogous art because they are from the same field of endeavor of data storage relocation.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the system of Ofek et al with the system of Kamiyama.

The motivation of doing so would have been carried out a data management device without lowering the performance of the system, as taught by Kamiyama (col. 15 line 4).

Therefore, it would have been obvious to combine the system of Ofek et al with Kamiyama to carry out the invention claimed in claim 4, 5, 15, and 16.

As to claims 6, 7, 17, and 18, Ofek et al ('935) disclose an I/O system and method comprising:

- a. an access management unit configured to set a volume to read-only and read-and-write (col. 23, col. 24 lines 0-10) as compare to claims 6, 7, 17, and 18.
- b. an unit to store updates that occurred between volumes (Fig. 1 item 28, Fig. 4 and 18 item 228, col. 3 line 60-61, and col. 8 lines 0-9) as compare to claims 6, 7, 17, and 18.
- c. a restoring unit to recover data by copying data of read-only volume to other volume as an error occurs (col. 23 lines 23-35, and col. 25-26) as compare to claims 6, 7, 17, and 18.

Although Ofek et al ('935) failed to teach an monitor unit configured to monitor frequencies of access to a read-only volume but Kamiyama ('139) disclosed:

- d. a monitor unit configured to manage the data access frequency and relocate the storage (Kamiyama, col. 4 lines 59-65, col. 14 lines 62-66 – col. 15 lines 0-4) as apply to claims 7 and 18.

Ofek et al and Kamiyama are analogous art because they are from the same field of endeavor of data storage relocation.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the system of Ofek et al with the system of Kamiyama.

The motivation of doing so would have been carried out a data management device without lowering the performance of the system, as taught by Kamiyama (col. 15 line 4).

Therefore, it would have been obvious to combine the system of Ofek et al with Kamiyama to carry out the invention claimed in claim 7 and 18.

As to claims 8, 9, 19, and 20, Ofek et al ('935) disclose an I/O system and method comprising:

- a. a spare volume management unit to manage a spare volume to which read/write access are forbidden (Fig. 3, and col. 27 lines 0-55).
- b. a restoring unit to recover data by copying data from a spare volume to another volume as an error occurs (col. 23 lines 23-25, col. 24-27).

As to claim 10, Ofek et al ('935) disclose an I/O system comprising:

- a. a plurality of storage devices; (see Fig. 1 item 22a-c, and col. 6, lines 20-29).
- b. a restoring unit configured to restore the data between the backup data as an error occurs (col. 23 lines 23-25, and col. 24-26).

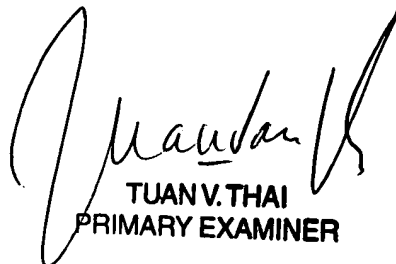


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2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh D. Vo whose telephone number is (571) 272-0708. The examiner can normally be reached on M-F 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TUAN V. THAI  
PRIMARY EXAMINER